ENGINEERING EVALUATION
ALBERTSON'S #7176
PLANT 15669
APPLICATION 08292

BACKGROUND

Albertson's Supermarket #7176 has applied for a permit for the following natural gas engine (S-1), which will be used to power a standby generator.

S-1 Emergency Standby Generator: Natural Gas Engine, GM, Model 30RZG, Serial No. 741825, 75 HP

This small natural gas-fired engine generator set (S-1) will emit air borne criteria pollutants and air toxins due to fuel combustion. The criteria pollutants are nitrogen oxides (NOx), carbon monoxide (CO), precursor organic compounds (POC) from unburned diesel fuel, sulfur dioxide (SO2) and particulate matter (PM10). All of these pollutants are briefly discussed on the District's web site at baaqmd.gov. The operation of this engine, S-1, should not pose any health threat to the surrounding community or the public at large.

EMISSION CALCULATIONS

Annual Average Emissions:

Basis:
- 75 bhp output rating for full-load, standby operation
- 100 hr/yr operation for testing and maintenance
- Firing rate of 0.535 MMBtu/hr
- NOx, VOC, CO and PM10 emission factors per Johnson Matthey Spec Sheet:

NOx:	1.50 g/hp-hr
VOC:	1.00 g/hp-hr (assume all POC compounds)
CO:	2.00 g/hp-hr
PM10:	negligible

SO2 emission factor is from EPA AP-42, Table 3.2-2 (Uncontrolled Natural Gas Emission Factors for 4-Stroke Lean-Burn Engines):

SO2:	0.0006 lb/MMBtu

NOx: (100 hr/yr)(75 hp)(1.50 g/hp-hr)(lb/454 g)/(365 day/yr) = 0.068 lb/day

POC: (100 hr/yr)(75 hp)(1.00 g/hp-hr)(lb/454 g)/(365 day/yr) = 0.045 lb/day

CO: (100 hr/yr)(75 hp)(2.00 g/hp-hr)(lb/454 g)/(365 day/yr) = 0.090 lb/day

PM10: (100 hr/yr)(75 hp)(Negligible g/hp-hr)(lb/454 g)/(365 day/yr) = Negligible lb/day

SO2: (100 hr/yr) (0.535 MMBtu/hr) (0.0006 lb/MMBtu) / (365 day/yr) = 0.0001 lb/day

Daily Emissions:

Daily emissions are calculated to establish whether a source triggers the requirement for BACT (10 lb/highest day total source emissions for any class of pollutants). 24-hr/day operation will be assumed.

NOx: (24 hr/day)(75 hp)(1.50 g/hp-hr)(lb/454 g) = 5.96 lb/day

POC: (24 hr/day)(75 hp)(1.00 g/hp-hr)(lb/454 g) = 3.97 lb/day

CO: (24 hr/day)(75 hp)(2.00 g/hp-hr)(lb/454 g) = 7.93 lb/day

PM10: (24 hr/day)(75 hp)(negligible g/hp-hr)(lb/454 g) = Negligible lb/day

SO2: (24 hr/day)(0.535 MMBtu/hr)(0.0006 lb/MMBtu) = 0.008 lb/day

CUMULATIVE INCREASE

No emissions will be added to the cumulative increase since the emissions for each pollutant are minuscule.

TOXIC RISK SREENING ANALYSIS

Estimated toxic pollutant emissions at the exhaust stack are summarized in the table below and compared to their respective toxic risk screen trigger level provided in Table 2-1-316 of Regulation 2, Rule 1. The source of the emission factors used in the emissions calculations are from an Environmental Protection Agency (EPA), AP-42 document.

Basis:

- 100 hr/yr operation for testing and maintenance
- Firing rate of 0.535 MMBtu/hr
- Emission factors from EPA AP-42 Table 3.2-2 (Uncontrolled Natural Gas Emission Factors for 4-Stroke Lean-Burn Engines)

Compound	AP-42 Factor (lbs/MMBtu)	IC Engine Emissions (lb/day)	(lb/yr)	BAAQMD Trigger (lbs/yr)	Triggers a Toxic Risk Screening (Yes/No)
1,1,2,2-Tetra chloroethane	4.00E-05	negligible	.003	3.3E+00	No
1,1,2-Trichloroethane	3.18E-05	negligible	.002	12.00	No
1,1-Dichloroethane	2.36E-05	negligible	.001	120.00	No
1,3-Butadiene	.0003	negligible	.024	1.1E+00	No
Acetaldehyde	.0084	.002	.670	72.00	No
Acrolein	.0051	.001	.411	3.9E+00	No
Benzene	.0004	negligible	.035	6.7E+00	No
Benzo(b)fluoranthene	1.66E-07	negligible	negligible	4.4E-02	No
Benzo(e)pyrene	4.15E-07	negligible	negligible	4.4E-02	No
Carbon Tetrachloride	3.67E-05	negligible	.003	4.6E+00	No
Chlorobenzene	3.04E-05	negligible	.002	14,000	No
Chloroform	2.85E-05	negligible	.002	36.00	No
Ethylene Dibromide	4.43E-05	negligible	.003	2.7E+00	No
Formaldehyde	.0528	012	4.22	33.00	No
Methanol	.0025	.001	.200	120,000	No
Methylene Chloride	2.00E-05	negligible	.002	190.00	No

n-Hexane	.0011	negligible	.088	83,000	No
Naphthalene	.0001	negligible	.006	270	No
Phenol	2.40E-05	negligible	.002	8,700	No
Styrene	2.36E-05	negligible	.002	140,000	No
Toluene	.0004	negligible	.033	39,000	No
Vinyl Chloride	1.49E-05	negligible	.001	2.5E+00	No
Xylene	.0002	negligible	.015	58,000	No

As shown in the table, no toxic compound exceeded their respective toxic trigger level. Toxic compounds below the toxic trigger level have an insignificant health risk per the District's Toxic Risk Management Policy.

The operation of this small emergency standby engine on natural gas (a clean burning fuel) should pose no health threat to the impacted community.

BEST AVAILABLE CONTROL TECHNOLOGY

Best Available Control Technology (BACT) is not triggered since no pollutant (NOx, CO, SO2, POC, PM10) is emitted at a rate equal to or greater than 10 pounds per day (Regulation 2-2-301).

OFFSETS

Emissions offsets for NOx, POC, PM10 and SO2 are not required for a facility that emits less than 15 tons per year of each pollutant (Regulation 2, Rule 2, Sections 302and 303). The District regulations at this time do not require offsets for CO emissions.

STATEMENT OF COMPLIANCE

S-1 will be operated as an emergency standby engine and therefore is not subject to the emission rate limits in Regulation 9, Rule 8 ("NOx and CO from Stationary Internal Combustion Engines"). S-1 is subject to the monitoring and record keeping requirements of Regulation 9-8-530 and the SO2 limitations of 9-1-301 (ground-level concentration) and 9-1-304 (0.5% by weight in fuel). Regulation 9-8-530 requirements are incorporated into the proposed permit conditions. Compliance with Regulation 9-1 is very likely since fuel with a 0.05% by weight sulfur is mandated for use in California. Like all sources, S-1 is subject to Regulation 6 ("Particulate and Visible Emissions"). This engine is not expected to produce visible emissions or fallout in violation of this regulation and will be assumed to be in compliance with Regulation 6 pending a regular inspection.

This application is considered to be ministerial under the District's Regulation 2-1-311 and therefore is not subject to CEQA review. The engineering review for this project requires only the application of standard permit conditions and standard emission factors in accordance with Permit Handbook Chapter 2.3.

Prevention of Significant Deterioration (PSD), New Source Performance Standards (NSPS) and National Emissions Standards for Hazardous Air Pollutants (NESHAPS) are not triggered.

PUBLIC NOTICING

This facility is within 1,000 feet of two schools:

Foster City Elementary
461 Beach Park Blvd.

(600 feet)

and

Sea Breeze Episcopal School (Pre-School & Day Care)
900 Edgewater Blvd.
(350 feet)

and therefore is subject to the public notification requirements of Regulation 2-1-412.

PERMIT CONDITIONS

APPLICATION 8292; Albertson's #7176; PLANT 15669
CONDITIONS FOR S-1

1. The owner/operator of emergency generator S-1 shall use only PUC quality natural gas. [Basis: Cumulative Increase]

2. The owner/operator of S-1 shall only operate this engine to mitigate emergency conditions or for reliability-related activities. Operation for reliability-related activities shall not exceed 100 hours in any calendar year. Operation while mitigating emergency conditions is unlimited.
[Basis: Regulation 9-8-330, Cumulative Increase]

   "Emergency Conditions" is defined as any of the following:
   [Basis: Regulation 9-8-231]

   a. Loss of regular natural gas supply
   b. Failure of regular electric power supply
   c. Flood mitigation
   d. Sewage overflow mitigation
   e. Fire
   f. Failure of a primary motor, but only for such time as needed to repair or replace the primary motor

   "Reliability-related activities" is defined as any of the following: [Basis: Regulation 9-8-232]

   a. Operation of an emergency standby engine to test its ability to perform for an emergency use, or
   b. Operation of an emergency standby engine during maintenance of a primary motor

3. The owner/operator of S-1 shall provide this engine with either: [Basis: Regulation 9-8-530]

   a. a non-resettable totalizing meter that measures the hours of operation for the engine, OR
   b. a non-resettable fuel usage meter (804,780 Btu of natural gas shall be assumed to be equivalent to 1 hour of reliability-related operation)

4. The owner/operator of S-1 shall maintain the following monthly records. These records shall be kept in a District-approved log for at least 2 years and shall be made available for District inspection upon request:

[Basis: Regulations 9-8-530, 1-441]

a. Total hours of operation
b. Hours of operation under emergency conditions and a description of the nature of each emergency condition
c. Fuel usage

RECOMMENDATION

Waive Authority to Construct and issue a conditional Permit to Operate to Albertson's #7176 for:

S-1 Emergency Standby Generator: Natural Gas Engine, GM, Model 30RZG, Serial No. 741825, 75 HP

By: _____

Craig Ullery
Air Quality Engineer II